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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/199,305 11/25/98 OHSAWA

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EXAMINER

THAIL

ART UNIT

PAPER NUMBER

2811

DATE MAILED:

09/11/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/199,305

Applicant(s)

OHSAWA ET AL.

Examiner

Luan Thai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☐ Responsive to communication(s) filed on 23 July 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 11-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 11-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☒ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 14) ☐ Notice of References Cited (PTO-892)
- 15) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 16) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 17) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 18) ☐ Notice of Informal Patent Application (PTO-152)
- 19) ☐ Other: _____

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DETAILED ACTION

This Office action is responsive to the amendment filed July 23, 2001.

Claims **1-5 and 11-157** are pending in this application.

Claims **6-10** have been canceled.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims **1-2 and 11-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukutomi et al. (5,976,912 of record).

Regarding claims **1-2**, Fukutomi et al. (figures 1-25, specifically figures 25c-25g) show a semiconductor device comprising: a plurality of wiring films 82 form on a front surface of a base comprising an insulating resin 83 and having electrode-forming holes 84, the surfaces of the wiring films 82 and the surface of the base 83 being positioned on the same plane and a part of the wiring films 82 overlapping with the electrode-forming holes 84; a conductive material 88 embedded into the electrode-forming holes 84 to form external electrodes on the

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back surface, away from the wiring films, of the base; a semiconductor element 85 positioned on the front surface of the base with an insulating film 86 there between, the back surface of the semiconductor element being bonded to the front surface of the base; and wires 100 for bonding the electrodes of the semiconductor element (Col. 26, lines 32+) to the corresponding wiring films; and a resin 87 sealed the semiconductor element and wires. Fukutomi et al fail to specify the diameter of the electrode-forming holes (i.e., 22 mm or less).

Although Fukutomi et al do not clearly teach the diameter of the electrode-forming holes as applicant claimed, forming a hole in an insulation film with a certain diameter is considered an obvious matter of design choice. It would have been obvious to one skilled in the art to form the electrode-forming holes with the claimed diameter, since such a modification would have involved a mere change in the size or the dimension of a component. A change in size or dimension is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1995).

Regarding claims **11-12**, the proposed device of Fukutomi et al. is taken to be inherent to be part of an electronic device.

5. Claim **3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukutomi et al. (5,976,912 of record) in view of Freyman et al. (5,859,475 of record).

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The proposed device of Fukutomi et al. disclose all the limitations of the claimed invention as detailed above with the exception of a metal ring bonded on the front surface of the base.

Freyman et al. while relate to a similar package design teach (Figs. 1-7) a metal ring 31 being bonded on the front surface of the base 201 at the exterior of the connecting sections with wires 701 in order to provide a support for the flex circuitry substrate and thereby reduces or eliminates the amount of warping during processing (Col. 3, lines 63-67). It would have been obvious to one having ordinary skill in the art to combine the metal ring as taught by Freyman et al. with Fukutomi et al.'s device in order to provide a support for the flex circuitry substrate and thereby reduces or eliminates the amount of warping during processing.

- 6.** Claims **4** and **13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukutomi et al. (5,976,912 of record) in view of McCormick et al. (5,909,057).

The proposed device of Fukutomi et al. discloses all the limitations of the claimed invention as detailed above with the exception of a reinforcement having a downward indented face covering the semiconductor element.

McCormick et al. while relate to a similar semiconductor device teach (see figures 2B-2F and 4A-4B) a reinforcement 214 having a downward indented face covering the semiconductor element 200 in order to prevent the semiconductor

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element from being warping or other wise moving during the curing step (Col. 8, lines 1+).

McCormick et al. and Fukutomi et al. are analogous art because they are from the same field of endeavor, that is semiconductor packaging art. It would have been obvious to one having ordinary skill in the art to combine the reinforcement as taught by McCormick et al. with Fukutomi et al.'s device in order to prevent the semiconductor element from being warping or other wise moving during the curing step.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukutomi et al. (5,976,912 of record) in view of Shim et al. (5,708,567 of record).

The proposed device of Fukutomi et al. discloses all the limitations of the claimed invention as detailed above with the exception of vent holes formed in the base.

Shim et al. while relates to a similar semiconductor package design teaches (see figures 1-2) the base 20 having the vent holes 23 for the purpose of generating the heat from the semiconductor chip (Col. 1, lines 45+).

Fukutomi et al. and Shim et al. are analogous art because they are from the same field of endeavor, that is the semiconductor packaging art. It would have been obvious to one having ordinary skill in the art to apply the conventional vent holes formed in the base as taught by Shim et al. to Fukutomi

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et al.'s device for the purpose of generating the heat from the semiconductor chip.

8. Claims **14-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukutomi et al. (5,976,912).

The proposed device of Fukutomi et al.'s (specifically figure 25g) discloses all the limitations of the claimed invention as detailed above with the exception of a nickel layer covering the copper layer of the wiring film. In other embodiments (figures 22c-22g and 17c-17g), Fukutomi et al. teach a copper wiring layer 63 (or 33 in Fig. 17) is covered by a nickel layer 64 so that the wires 67 (or wires 40 in Fig. 17) are bonded to the nickel layer (Col. 23, lines 10-39 and Col. 16, lines 16-37) to have high integration of semiconductor chips which can be fabricated stably with good productivity (Col. 26, lines 57+). It would have been within the general skill of a worker in the art at the time the invention was made to modify the proposed device, disclosed in Fukutomi et al.'s figure 25g, by using the plated wiring film, as disclosed in Fukutomi et al.'s Figs. 22c-22g and 17c-17g, for the device to be fabricated stably with good productivity.

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Conclusion

9. Applicant's arguments with respect to claims **1-5** and **11-15** have been fully considered, but they are deemed to be moot in view of the new grounds of rejection.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action because the newly added limitations in claims 1, 11 and 15 raise new issues that would require further consideration and/or search. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

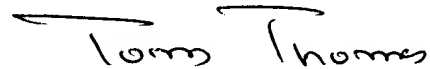
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is (703) 308-1211. The examiner can normally be reached on 7:00 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



TOM THOMAS
SUPERVISORY PATENT EXAMINER

Luan Thai
September 7, 2001